

REMARKS

The Examiner has rejected claims 1-3, 14-16, and 18 under 35 U.S.C. 103(a) as being unpatentable over Loopstra *et al.* The Examiner has allowed claims 8-13, and 19-20. Except for claim 1, Applicant retains these claims in their current form and respectfully presents arguments for their allowability. Applicant has also added new claims 21-26 for subject matter disclosed, but not previously claimed. No new matter has been added.

Claim Rejections - 35 USC § 103

The Examiner has rejected claims 1-3 under 35 U.S.C. 103(a) as being unpatentable over Loopstra *et al.* For a proper showing that these claims are obvious in light of Loopstra *et al.*, each element of the claimed invention must be disclosed, taught, or suggested in the cited reference.

This set of claims includes one independent claim, namely claim 1. Independent claim 1 has been amended to more clearly define the invention. Independent claim 1 now includes the limitations that the first stage is movable in a plane on the base to a series of first positions, while the second stage is movable in said plane on said base to a series of second positions. The first positions and the second positions are coextensive. This allows the first and second stage to move around the base freely, and even completely swap positions. However, when swapping positions the stages interfere with the position determination of each stage being made by the interferometers. Accordingly, the moveable mirrors are provided to allow for continuous determination of a position of each stage at any position - even where the first stage eclipses the second stage with respect to one of the interferometers.

Loopstra *et al.*, however, discloses a positioning device 3 having a displacement system 35 for displacing substrate holders 21, 23 over a guiding surface 33. As best seen in Figure 2 of Loopstra *et al.*, the substrate holders 21, 23 can only move along a first part 73, 75 extending parallel to the X-direction, and a first part 81, 83, 85, 87 extending parallel to the Y-direction. Accordingly, the substrate holder 21 cannot move to all of the same positions as the substrate holder 23. In other words, the movement of the substrate holders 21 and 23 is not coextensive, as required by amended independent claim 1.

Furthermore, as stated by the Examiner "Loopstra's device, however, fails to teach a plurality of interferometers with a corresponding plurality of mirrors." (Emphasis added). The Examiner further states that:

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to add a plurality of interferometers to the base and a corresponding plurality of mirrors to the stages of the device of Loopstra in the claimed configuration to facilitate the continual measurement of the position of the stages of the device. It is well known in the art to use interferometers as precise measurement means for positional measurements of movable tables and stages. (Emphasis added).

Accordingly, the Examiner has asserted that it is well known to use interferometers. However, the examiner has not asserted that it is well known to use interferometers and mirrors to facilitate the continual measurement of the position of the stages of the device, but has argued such is obvious without support. Loopstra *et al.* does not disclose, teach, or suggest a plurality of interferometers mounted on a base with a corresponding plurality of moveable mirrors mounted on the first stage and the second stage. Furthermore, Loopstra *et al.* does not disclose, teach, or suggest that the moveable mirrors are configured and dimensioned to allow for continuous determination of a position of each stage at any position, even where said first stage eclipses the second stage with respect to an interferometer. Indeed, it is this ability to continually determine the positions of the stages that gives the present invention many of its advantages over the prior art, such as by allowing the stages to completely swap positions, move in circular paths, *etc.*

Furthermore, the Examiner may only take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being well-known in the art, or if of such notorious character that official notice can be taken. (*See* MPEP 2144.03). Therefore, to the extent that the Examiner believes that interferometers and moveable mirrors configured and dimensioned to allow for continuous determination of the positions of the stages is well known in the art, the Examiner is requested to cite a reference in support of his belief. (*Id.*)

In light of the above, it is respectfully submitted that the Examiner has not shown that claims 1-3 are unpatentable over Loopstra *et al.*, as each element of the claimed invention has not been disclosed, taught, or suggested in the cited reference. Accordingly, it is respectfully requested that this rejection be withdrawn and claim 1 be allowed.

The Examiner further states that “[a]s for claims 2 and 3, making one stage of the device differ in dimension from the other stage is well known in the art.” Again, the Examiner is requested to cite a reference in support of this position. Applicant respectfully contends that neither Loopstra *et al.* nor the Examiner’s official notice discloses, teaches, or suggests that the first and second stages differ in dimension. Indeed, Loopstra *et al.* teaches

away from this, as is evident by the substrate holders 21, 23, which are clearly shown as the same size in the Figures.

Therefore, in addition to the reasons stated above in relation to independent claim 1, from which claims 2 and 3 depend, it is respectfully submitted that the Examiner has not shown that each element of claims 2 and 3 has been disclosed, taught, or suggested in the cited reference. Accordingly, it is respectfully requested that this rejection be withdrawn and claims 2 and 3 be allowed.

Furthermore, the Examiner rejects claims 14-16 under 35 U.S.C. 103(a) as being unpatentable over Loopstra *et al.* Regarding claim 14, The Examiner states that "Loopstra's device, however, fails to teach a plurality of interferometers with a corresponding plurality of mirrors attached to the stages to allow continual positional measurements of the stages of the device." The Examiner goes further and states that:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a plurality of interferometers to the base and a corresponding plurality of mirrors to the stages of the device of Loopstra in the claimed configuration to facilitate the continual measurement of the position of the stages of the device. It is well known in the art to use interferometers as precise measurement means for positional measurements of movable tables and stages. (Emphasis added).

Again, the Examiner has asserted that it is well known to use interferometers. However, the examiner has not asserted that it is well known for interferometers and moveable mirrors to cooperate to continuously determine the position of both stages, but has argued such is obvious without support.

Independent claim 14 includes the limitation that the plurality of interferometers and moveable mirrors cooperate to continuously determine the position of both the stages, such that if the first stage is interposed between second the stage and one of the interferometers, the second stage position is determined by at least another one of the interferometers. However, as set out above, Loopstra *et al.* does not disclose, teach, or suggest that the plurality of interferometers and moveable mirrors cooperate to continuously determine the position of both the stages. This continual determination of the position is even the case where the first stage is interposed between second the stage and one of the interferometers.

Furthermore, to the extent that the Examiner believes that interferometers and moveable mirrors configured and dimensioned to allow for continuous determination of the

positions of the stages is well known in the art, the Examiner is requested to cite a reference(s) in support of his belief.

Regarding claim 15, the Examiner states that “making one of the mirrors larger than the other is well known in the art.” Again, to the extent that the Examiner believes that making one of the mirrors larger than the other is well known in the art is well known in the art, the Examiner is requested to cite a reference(s) in support of his position.

Neither Loopstra *et al.* nor the Examiner’s official notice discloses, teaches, suggests, the use of mirrors, let alone unquestionably demonstrates that one of the mirrors is larger than the other. Indeed, it is this size difference of the mirrors that allows the interferometers to continually determine the positions of both stages, even where one stage eclipses the other.

Regarding claim 16, the Examiner states that “making the second mirror approximately equal in size to the second stage is well known.” Again, to the extent that the Examiner believes that making the second mirror approximately equal in size to the second stage is well known in the art, the Examiner is requested to cite a reference(s) in support of his position.

Neither Loopstra *et al.* nor the Examiner’s official notice discloses, teaches, or suggests the use of mirrors, let alone unquestionably demonstrates that the second mirror is approximately the same size as the second stage.

Accordingly, it is respectfully submitted that the Examiner has not shown that claims 14-16 are unpatentable over Loopstra *et al.*, as each element of the claimed invention has not been disclosed, taught, or suggested by the cited reference(s) or the Examiner’s official notice. Therefore, it is respectfully requested that this rejection be withdrawn and independent claim 14, and its dependent claims 15 and 16, be allowed.

Finally, the Examiner rejects claim 18 under 35 U.S.C. 103 as being unpatentable over Loopstra *et al.* The Examiner further states that:

Loopstra’s device, however, fails to teach a plurality of interferometers with a corresponding plurality of mirrors attached to the stages to allow continual positional measurements of the stages of the device and the size difference wherein the second stage is larger than the first.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the second stage in a manner that it is larger in size than the first and to add a plurality of interferometers to the base and a corresponding plurality of mirrors to the stages of the device of Loopstra in the claimed configuration to facilitate the continual measurement of the position of the stages of the device. It is well known in

the art to change the size of an element of a device to make it larger or smaller as required. It is also well known in the art to use interferometers as precise measurement means for positional measurements of movable tables and stages. (Emphasis Added).

The Examiner has asserted that it is well known to change the size of an element of a device to make it larger or smaller as required and that it is well known to use interferometers. However, the Examiner has not asserted that it is well known that interferometers and moveable mirrors are configured to facilitate the continuous determination of the positions of the stages, but has argued such is obvious without support.

Independent claim 18 includes the limitation that the second stage is larger than the first stage in at least one dimension of the plane. This claim also includes the limitation that the interferometers and moveable mirrors are configured to facilitate the continuous determination of the positions of the stages, and where one or more portions of the moveable mirrors mounted on the second stage. As explained above, the ability to continually determine the positions of the stages is highly advantageous. However, as set out above, Loopstra *et al.* does not disclose, teach, or suggest that the second stage is larger than the first stage. Loopstra *et al.* also does not disclose, teach, or that the interferometers and moveable mirrors are configured to facilitate the continuous determination of the positions of the stages.

Furthermore, to the extent that the Examiner believes that interferometers and moveable mirrors configured and dimensioned to allow for continuous determination of the positions of the stages is well known in the art, the Examiner is requested to cite a reference(s) in support of his position.

In light of the above, it is respectfully submitted that the Examiner has not shown that claim 18 is unpatentable over Loopstra *et al.*, as each element of the claimed invention has not been disclosed, taught, or suggested in the cited reference(s). Accordingly, it is respectfully requested that this rejection be withdrawn and independent claim 18 be allowed.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is now in a condition for allowance. Should the Examiner believe that a telephone interview would help advance the prosecution of this case, the Examiner is requested to contact the undersigned attorney at 650-849-7603.

If there are any fees or credits due in connection with the filing of this Amendment, including any fees required for an Extension of Time under 37 C.F.R. Section 1.136,

authorization is given to charge any necessary fees to our Deposit Account No. 16-1150
(order no. 10636-0007-999). A copy of this sheet is enclosed for such purpose.

Respectfully submitted,

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